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EKOLOJİK TARIM ORGANİZASYONU DERNEĞİ

German-Turkish Cooperation Organic Agriculture



Survey of the Residue Situation in Turkish Organic Products

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1 Introduction

Since December 2011, ETO and FiBL are jointly implementing the German-Turkish Bilateral Cooperation Project Organic Agriculture. The aim of this project is to ensure and improve the quality of Turkish organic food produced for the European market. The focus of the Project is on the avoidance of unwanted residues such as pesticide contamination. The production chains for dried apricots, sultanas and hazelnuts were investigated in greater depth, and measures were developed for quality improvement.
There is very little guidance from the EU Commission on how to handle residues on organic products. This has caused uncertainty about whether such residues can be tolerated at all, and if so, up to which level. In an attempt to arrive at a uniform interpretation, the European Organic Certifiers Council (EOCC) has produced a comprehensive document named the 'EOCC residue guideline'. The Project has supported the translation of this guideline into Turkish, and a one-day seminar for CBs was conducted. The guideline is now applied by a couple of CBs in Turkey.

2 Aims and limits of the survey

A survey was conducted in autumn 2013 among selected actors in Central Europe and Turkey, with the objective to collect up-to-date data which might be used for the performance review of the project. The survey covered years 2011 (before the Project's activities were started) and 2012 – 13 (after the improvement measures were implemented).

The main aim was to find out whether the actors noted a change in the quality of Turkish organic foods. Furthermore, the Project gladly accepted suggestions on how to improve its efficiency in the course of its prolongation. As the survey was designed to investigate the perception of the residue issue, it gives only limited information on the true occurance of pesticide residues. For example, one residue case can be mentioned by several actors in the trade chain (supplier, client, CB). Quantitative comparisons of individual answers should therefore be made with caution. It should be kept in mind that Turkish exporters and Central European importers have different perspectives even if they trade the same goods. Exporters are mainly concerned with aspects related to production and certification, while importers take certification for granted, and are mainly concerned with consumers' acceptance.

3 Realization of the survey

3.1 Questionnaire

As a first step, a basic questionnaire was prepared. Then, minor modifications were made to accommodate the different situation of exporters vs. importers.

The questionnaire was sent to the interview partners in advance, to allow them some time for preparation. A few days later, the persons were interviewed on the phone, or in some cases visited, and their answers noted in the questionnaire.

3.2 Participating actors

In Central Europe, the focus was on trading companies which trade Turkish organic products. In addition, a few organizations which coordinate residue testing of organic products were also included, due to their good overview. The actors were mainly from Germany, but were complemented with a few selected actors from Austria and Switzerland. A total of 13 actors from Central Europe were interviewed.

In Turkey, the focus was on trading companies which export Turkish organic products into Central Europe, and on control bodies (CBs). A total of 7 companies and 5 CBs was interviewed.

Actors are not explicitly mentioned here, to guard the confidentiality of their individual responses. We take the opportunity to thank all actors collectively for their valuable contribution to this survey!

3.3 Presentation of results

The results for Central Europe are given in chapters 4 and 5, while the results for the Turkish actors are given in chapters 6 and 7. In chapter 8, the results are summarized for all actors. In chapter 9, conclusions are drawn with respect to the project.

The results of the survey are presented in tables, where all possible answers are listed, and the frequency of responses is recorded for each possible answer (one actor giving this answer = 1). For each question, the **most frequent answer is printed in bold**.

Note: the total number of answers may deviate from the number of participants in the survey. This is because (1) multiple answers were possible, and (2) not all participants answered all questions.

4 Results of the survey among Central European actors

4.1 Residue testing

Question 4.1.1: **How many residue tests has your company executed on Turkish organic products in 2013?**	
Possible answers	**Frequency of responses**
no own tests, partners do testing	3
1 to 20 tests	-
20 to 50 tests	**7**
50 to 100 tests	-

Question 4.1.2: **Frequency of analysis: I analyse Turkish organic products…**	
Possible answers	**Frequency of responses**
with the same frequency as organic products from other origins	**10**
less frequently than organic products from other origins	–
more often than organic products from other origins	2
Comments	
We test each lot, regardless of origin.	4
Aflatoxins are tested more frequently than pesticides.	1

Question 4.1.3: **Are you aware that third parties analyze Turkish organic products which you trade?**	
Possible answers	**Frequency of responses**
exporters (Turkish)	**9**
CBs (Turkish)	7
authorities (Turkish)*	-
my clients (European)	3
authorities (European)	1
Comments	
*several companies stated that they are not certain about the activities of Turkish authorities.	

4.2 Pesticide residues

Question 4.2.1: **Have you encountered cases[1] of pesticide residues in your organic food products?**	
Year 2013, possible answers	**Frequency of responses**
yes	**5**
no	6
Year 2012, possible answers	**Frequency of responses**
yes	**8**
no	3
Year 2011, possible answers	**Frequency of responses**
yes	**8**
no	3

Comments (for all years)
Number of cases for 2013 is underestimated as only 10 months of the year were covered at the time of the survey. Some companies did not report cases for 2013, because they had not yet entered the data in their databases.
On the other hand, a few companies did not yet trade Turkish organic products in 2011 and hence reported no residues for 2011.
One company uses a different definition of 'residue case', where residues below 0.01 mg/kg are not regarded as 'residue cases'.

[1] In this context, a "case" is defined by having evidence of pesticide residues in organic products, regardless of the amount, or reason or whether it effected the certification status of the product.

Question 4.2.2: **Does the number of residue cases show a trend from 2011 to 2013?**	
Possible answers	**Frequency of responses**
substantial decrease (30 % or more)	**3**
slight decrease (10 – 30 %)	1
no change (±10 %)	**3**
slight increase (10 – 30 %)	-
substantial increase (30 % or more)	1
Comments	
In some companies, the apparent increase of residue cases is linked to increased turnover.	
Frequency of cases is mainly linked to large-scale events such as ❯dodine in apricots (around 2008) ❯glyphosate in lentils (around 2011) ❯DDAC in strawberries.	

Question4.2.3: **Which crops were tested positive with residues?**	
Possible answers	**Frequency of responses**
dried apricots	2
sultanas	2
hazelnuts	1
lentils / chickpeas	**4**
sweet & sour cherries	2
strawberries	1
peppers	1
herbs	1
spices	1
figs	-
Comments regarding lentils / chickpeas	
In 2010, **glyphosate** residues were detected in lentils from Turkey. As a consequence, many companies initiated separate testing programmes for glyphosate (which cannot be detected with standard pesticide screenings). The focus was on lentils, but other foods such as chickpeas and wheat were also covered. Most of the reported residue cases in lentils / chickpeas were findings of glyphosate.	
In addition, **phosphine** was also found on lentils / chickpeas. Phosphine is a fumigant which is used on many (conventional) dry products. Contamination during storage or transport can lead to small residues on organic products.	

Question 4.2.4:
Which type of residues was detected? Please give name of pesticide and quantity detected.

Possible answers	**Frequency of responses**
glyphosate (in lentils & chickpeas)	2
dodine (in apricots)	2
DDAC (in strawberries)	1
phosphine (in dry products such as lentils/chickpeas)	1

Comments

A range of pesticides was occasionally found. Here, we report only pesticides which were found more than once.

Four companies stated that mycotoxins (aflatoxin/ochratoxin) are also a major concern. Important: These are not pesticides, but by-products from microbial growth.

Question 4.2.5:
Who detected the residues?

Possible answers	**Frequency of responses**
the exporter (Turkish)	2
the CB (Turkish)	1
authority (Turkish)	-
the importer (European)	**6**
our client (European)	1
authority (European)	1

Question 4.2.6: **What were the consequences of the residue cases?**	
Possible answers	**Frequency of responses**
The product was already marketed when the residues were detected.	1
The residue case has substantially delayed the marketing.	3
The residue case has produced additional costs for the company.	2
Finally the product in question could be marketed as organic.	**4**
Residue detected in a preliminary sample; as a result, the goods were not imported.	**4**
Goods were returned to the exporter.	3
Organic status of the product withdrawn by the CB.	2
Goods voluntarily have been sold with conventional indication.	3
Goods could not be marketed at all.	-
Comments	
One company implements a «zero-tolerance» for pesticide residues.	

4.3 Origins and causes of contamination

This section reports the suspicions of Central European companies about the origins of residues. In general, the origins are assumed to be in Turkey. However, the origins may or may not have been verified in individual cases. This section should therefore be interpreted with caution.

Question 4.3.1: **I suspect that residues are mainly caused during the following production steps:**	
Possible answers	**Frequency of responses**
while growing in the field	**6**
while growing in the field	-
during transport (from farm to factory)	1
during storage (in the factory)	3
during processing (in the factory)	3

Question 4.3.2: **I suspect that the residues have been caused by the following reasons:**	
Possible answers	**Frequency of responses**
use of unauthorized pesticides by organic farmers	3
drift from neighbouring fields	**5**
polluted groundwater	2
previous contamination of the soil	1
contamination during processing in the factory	3
contamination caused by storage preservatives	2
contamination from packaging material	1
unintentional commingling with conventional goods	4
intentional mixing with conventional goods	1
Comments	
Jute bags, which are not sufficiently washed.	
Machines (**brushes**), which are not sufficiently cleaned.	
Drift is often mentioned in connection with sultanas, while **commingling and mixing** are often mentioned in connection with apricots.	

Question 4.3.3: **I suspect that the residues are due to the following shortcomings:**	
Possible answers	**Frequency of responses**
fields are not suitable for organic farming	-
equipment, machinery or installations are not suitable for organic farming / processing	**2**
lack of knowledge	**3**
farmers / traders / staff are not enough motivated for quality issues	**3**
insufficient separation and/or identification of goods	1
inadequate cleanliness / hygiene	1
fraud	-

4.4 Personal opinions on the overall situation

Question 4.4.1:
What is your personal opinion regarding pesticide residues in organic products from Turkey?

Possible answers	**Frequency of responses**
there are no such problems	1
the problem is small	2
the problem is comparable to other countries	**5**
the problem is more pronounced than in other countries	4
situation is critical and improvements are necessary	-
Comments	
The problem occurs mainly in apricots.	
The problem varies from year to year.	
The problem is comparable as in other countries where organic farming is practiced mainly for economic reasons.	

Question 4.4.2:
Have you noticed a trend since 2011?

Possible answers	**Frequency of responses**
no trend	2
situation has improved	**3**
today, the situation is worse than in 2011	**-**
Comments	
‘Trends‘ in residue cases do not necessarily reflect trends in residues. They are largely an artefact of the availability of new/more sensitive analytical methods (e.g. glyphosate, DDAC). (mentioned twice).	
There was a great improvement from 2005 – 10. Since then, the situation is rather stable.	
In aflatoxins, the situation has become worse.	

Question 4.4.3: **In residue cases, what was your personal experience with the Turkish authorities?**	
Possible answers	**Frequency of responses**
no experience	**12**
they acted appropriately	-
their reaction was inappropriate	-

Question 4.4.4: **In residue cases, what was your personal experience with the European authorities?**	
Possible answers	**Frequency of responses**
no experience	**4**
they acted appropriately	3
their reaction was inappropriate	-

Question 4.4.5: **In residue cases, what was your personal experience with Turkish CBs?**	
Possible answers	**Frequency of responses**
no experience	**3**
they acted appropriately	2
their reaction was inappropriate	2
Comments	
Communication with CBs was difficult / too slow. (mentioned twice)	
CBs should make more analyses.	

Question4.4.6: **In residue cases, what was your personal experience with exporters?**	
Possible answers	**Frequency of responses**
no experience	-
they acted appropriately	**5**
their reaction was inappropriate	-
mixed (for some exporters, it was appropriate; for others, it was inappropriate)	2
Comments	
Reaction was too slow. (mentioned twice)	
Highest satisfaction in case of long-term relationship between exporter and importer. (mentioned twice)	
The exporters know our quality requirements.	
The director decides, and he wants to sell. Even if the quality manager is sceptical, he cannot decide.	

Question 4.4.7: **In residue cases, what was your personal experience with clients?**	
Possible answers	**Frequency of responses**
no experience	-
they acted appropriately	-
their reaction was inappropriate	-
mixed (for some exporters, it was appropriate; for others, it was inappropriate)	**1**

Question 4.4.8: **Other comments**	
Possible answers	**Frequency of responses**
The Turkish market is interesting, but market access is difficult.	1
Currently, the focus is too much on pesticide residues.	1

5 Suggestions for improvements by Central European actors

As the Project will be prolonged for 2 more years, we kindly asked the interview partners for suggestions regarding subjects which need to be improved and possible corrective measures.

Question 5.1:
On which crops should the Project focus?

Possible answers	Frequency of responses
dried apricots	1
sultanas	-
hazelnuts	-
sweet & sour cherries	1
legumes (lentils, chickpeas)	1
herbs & spices	1
strawberries	1
figs	1
fresh products (aspect of logistics)	1

Question 5.2:
On which segment of the production chain should the Project focus?

Possible answers	Frequency of responses
production	1
transport	2
storage	2
processing	2
packing	2

Question 5.3:
On which regions should the Project focus?

Possible answers	Frequency of responses
Malatya (apricots)	1

Question 5.4:
Other focuses?

Possible answers	**Frequency of responses**
Mycotoxins (aflatoxin and/or ochratoxin)	1

Question 5.5:
What are the most urgent improvements?

Possible answers	**Frequency of responses**
more modern / better suited equipment, machinery, installations or facilities	1
better cleaning / maintenance	3
better hygiene conditions	1
better separation of organic and conventional products	**7**
better labelling of goods and lots	1

Question 5.6:
How can improvements be achieved best?

Possible answers	**Frequency of responses**
better training of farmers	**6**
better training of processors	5
better training of inspectors	4
more information to Turkish exporters	2
more information to European importers	1
better awareness / motivation of staff for quality issues	5
tougher sanctions for irregularities	1
more frequent analyses by exporters	4
better communication between CBs and importers	2
better traceability	1
better transparency	1
long-term relationships between suppliers and clients (including visits)	2

6 Results of the survey among Turkish actors

6.1 Residue testing

Question 6.1.1:
How many residue tests has your company executed for organic products in 2013?

Possible answers	Frequency of responses
0 to 20 tests	**3**
20 to 50 tests	2
50 to 100 tests	-
more than 100 tests	1
Comments	
CBs executed significantly more tests than the companies.	

Question 6.1.2:
Frequency of analysis: I analyse organic products …

Possible answers	Frequency of responses
with the same frequency as any other food product in conventional quality	**2**
less frequently than conventional food product	2
more often than conventional products	3
question not relevant – no conventional products	2
Comments	
Question not relevant for CBs	

Question 6.1.3:
Compared to 2 years ago (2011), do you presently execute more or less residue tests?

Possible answers	Frequency of responses
the number of residue tests has substantially decreased (more than 50% less)	1
the number of residue tests has slightly decreased (10 to 50% less)	-
no change in number of residue tests	2
there is a slight increase of residue tests (10 to 50% more)	2
there is a substantial increase of residue tests (more than 50%)	2

Reasons and Comments
CBs note that there is a substantial increase in line with their increasing number of clients.
Analysis requests increased after the April 2010 government notice.
The need for more analyses became evident in the risk assessments after going through problems.
Buyers are getting more serious and cautious. We also want to know if there is contamination in our raw material. Analysis helps solve problems.
New requirements were introduced in labs' standard analysis packages. For example: glyphosate became popular worldwide.
We have had no residue cases over the past 12 years. CB trusts us as a good producer.
We perform tests in every lot.

Question 6.1.4:
Information on residue analysis performed by your CB / by your company

Possible answers	Frequency of responses
My CB is / we are regularly taking samples on processing level and analysing them.	**6**
No residue analysis is done by my CB / by us on processor level.	-
My CB is informing me / we are informing our clients about the analysis results.	3
I do not get any information from my CB regarding the analysis results.	-
My CB informs me / We inform clients about the analysis results only in case of residue detection.	-
Reasons and Comments	
CBs regularly analyse samples on processing level and inform their clients about the results.	

Question 6.1.5: **Information on residue analysis performed by your clients**	
Possible answers	**Frequency of responses**
My clients are regularly taking samples and analysing them.	**3**
I do not know whether my clients are analysing my products.	-
My clients are informing me about the analysis results.	1
I do not get any information from my clients regarding the analysis results.	-
My clients inform me about the analysis results only in case of residue detection.	**3**
Reasons and Comments	
CBs' clients inform their CBs on the analysis results, but in general CBs have their own analysis procedures anyways.	

Question 6.1.6: Are you aware about residue analysis performed by Turkish authorities, or by authorities in the country of destination?	
Possible answers	**Frequency of responses**
yes	**5**
no	2
Comments from companies	
Complaint: We get tests done per lot, then our CB gets tests done, then we send samples to our importer for them to make tests again. No residue is detected until this stage. Later after the goods are shipped, new tests get carried out and they detect a residue. We cannot trust the results at this point. Contamination could have been at any stage including shipment.	
Complaint: There is no standardized analysis procedure among accredited labs. Then why/how are they accredited? We suggest that an independent observer should attend the sample selection and that there should be a mutual agreement between the seller/buyer that there will be no further analyses made.	
Complaint: The limits of detection differ from lab to lab, and get lower and lower every year because of the commercial competition. This leads to no equivalence among labs. One customer now has to send the same sample to more than a single lab.	

Comments from CBs
CBs are aware of the analyses, especially in cases of residue detection. Further comments were: ❯They are not happy with the controlling system of the municipality. ❯They are not happy that there is no tolerance by Turkish authorities for trace amounts of residue while there is tolerance abroad. ❯They authenticate their clients, then their clients' clients perform new tests and detect residues, they are held responsible. "There is accreditation, but there is no standardisation".

6.2 Pesticide residues

Question 6.2.1:
Have you encountered cases[1] of pesticide residues in your organic food products?

Year 2013, possible answers	Frequency of responses
yes	**4**
no	2
Year 2012, possible answers	**Frequency of responses**
yes	**4**
no	2
Year 2011, possible answers	**Frequency of responses**
yes	**4**
no	2

Comments (for all years)
CBs reported residue cases in all years. Further comments: ❯They wish that all labs perform the same procedure for analyses, for example accept the same limits of detection.

[1] In this context, a “case” is defined by having evidence of pesticide residues in organic products, regardless of the amount, or reason or whether it effected the certification status of the product.

Question 6.2.2:
Does the number of residue cases show a trend from 2011 to 2013?

Possible answers	Frequency of responses
situation has improved	**5**
no trend	1
situation is worse than before	**1**

Comments from companies
Even though the results might appear to show the situation is getting worse, we see that this is due to the increased analytical sensitivity (lowered limits of detection), and we know it is actually improving.
Companies act more cautiously due to the problems seen in recent years. There have been improvements in training, analyses and qualification of staff.
For improvement, the system needs to be based on ethics. The producer must have internalised this type of agriculture and there must be a civil control that the organic agriculture ethics require.
It is a mistake to only look at the analysis results and say "this is not organic" or vice versa. Are all the prior efforts such as trainings, controls, tests, of no avail?
Crop quality is also important (not only residues).
Comments from CBs
Trend depends on the season and on our changing number/size of clients.

Question 6.2.3:
Which crops were tested positive with residues?

Possible answers	Frequency of responses
dried apricots	2
sultanas	**3 (57 cases)**
hazelnuts	-
vine	1
other fresh products	1
oilseeds	1
Comment on sultanas	
Three companies reported residues in sultanas (a total of 57 cases).	
Comments from companies	
We do not trust labs for residues detected. We have seen labs making mistakes.	
Comments from CBs	
It is very determinative which lab is carrying out the test, compared to the real quality of the product.	

Question 6.2.4:
Which type of residues was detected? Please give name of pesticide and quantity detected.

Herbicides, insecticides, acaricides, fungicides, GMOs and antibiotics were found. The following substances were named most frequently:

- glyphosate (herbicide)
- dithiocarbomates
- fumigants in general (pirimiphos-methyl, phosphine, etc.)

One company stated that glyphosate residues were often above limits, while residues of many other pesticides are generally below limits.

Question 6.2.5:
Who detected the residues?

Possible answers	**Frequency of responses**
company	2
CB	2
client	**5**
authority	-

Comments from CBs

CBs often detect residues themselves.

It is also common that the “opposite“ CB in the destination country detects the residue.

Question 6.2.6: **What were the consequences of the residue cases?**	
Possible answers	**Frequency of responses**
The product was already marketed when the residues were detected.	1
The residue case has substantially delayed the marketing.	**2**
The residue case has produced additional costs for the company.	**2**
Finally the product in question could be marketed as organic.	1
Residue detected in a preliminary sample; as a result of this, the goods have not been accepted by the client.	-
Organic status of the product withdrawn by the CB	1
Goods voluntarily have been sold with conventional indication.	1
Goods could not be marketed at all.	1
Comments from CBs	
CBs commonly reported: ❯"The residue case has substantially delayed the marketing." and ❯"Organic status of the product withdrawn by the CB."	

6.3 Origins and causes of contamination

Question 6.3.1: **I suspect that residues are mainly caused during the following production steps:**	
Possible answers	**Frequency of responses**
while growing in the field	**4**
during drying (on farm level)	2
during transport (from farm to factory)	**4**
during storage (in the factory)	2
during processing (in the factory)	1
Comments from CBs	
All CBs agreed that the main causes occur either ❯"while growing in the field" or ❯"during storage in the factory"	

Question 6.3.2: I suspect that the residues have been caused by the following reasons:	
Possible answers	**Frequency of responses**
use of unauthorized pesticides by organic farmers	2
drift from neighbouring fields	**5**
previous contamination of the soil	1
contamination during processing in the factory	-
contamination caused by storage preservatives	2
contamination caused by storage preservatives (at importer)	1
contamination from packaging material	-
unintentional commingling with conventional goods	3
intentional mixing with conventional goods	2
contaminated rain or ground water	1
Comments from CBs	
CBs agree with most of the causes given above, except for ❯"previous contamination of the soil" and ❯"contamination from packaging material"	

Question 6.3.3: **I suspect that the residues are due to the following shortcomings:**	
Possible answers	**Frequency of responses**
fields are not suitable for organic farming (fragmented field structure increases the risk of drift)	2
equipment, machinery or installations are not suitable for organic farming / processing	2
lack ofknowledge	**5**
farmers / traders / staff is not enough motivated for quality issues	2
insufficient separation and /or identification of goods	1
inadequate cleanliness / hygiene	2
fraud	3
Comments	
"lack of knowledge" was not only mentioned most frequently, but also strongly highlighted by many actors.	

6.4 Personal opinions on the overall situation

Question 6.4.1:
What is your personal opinion regarding pesticide residues in organic products from Turkey?

Possible answers	**Frequency of responses**
there are no such problems	-
there are problems, but not worse than in other countries	**5**
situation is critical and improvements are necessary	2
Comments	
To support that the situation is not worse than in other countries, both companies and CBs reported examples from other countries where residues cases also occurred.	
One company stated: “No institution or company shares with others what they go through, things remain secret. This is a major block against unity and development of the sector.”	

Question6.4.2:
In residue cases, what was your personal experience with authorities?

Possible answers	**Frequency of responses**
no experience	-
they acted appropriately	2
their reaction was inappropriate	**3**
Comments from companies	
They should take responsibility and all actors should accept that organic production is an ethical responsibility.	
Unnecessarily tough. Municipality makes it harder for the sector to develop. Reaction of authorities in Europe is even tougher.	
Comments from CBs	
CBs in general find reaction of authorities not appropriate; too tough. They point out the April 2010 government notice, and they complain about different voices inside the municipality - different interpretations of the same regulation text.	

Question 6.4.3: **In residue cases, what was your personal experience with CBs?**	
Possible answers	**Frequency of responses**
no experience	-
they acted appropriately	**4**
their reaction was inappropriate	1
Comments from companies	
CBs in Europe pass the responsibility to headquarters, the exporter is left alone.	

Question 6.4.4: **In residue cases, what was your personal experience with suppliers?**	
Possible answers	**Frequency of responses**
no experience	-
they acted appropriately	**2**
their reaction was inappropriate	**2**
Comments from companies	
The competition and sometimes lack of raw material makes the suppliers too aggressive.	
Comments from CBs	
CBs answer this question regarding their "clients".	
Some noted that their clients react appropriately and follow the procedure.	
Others noted that their clients try to find a workaround for the detected residue	

7 Suggestions for improvements by Turkish actors

As the Project will be prolonged for 2 more years, we kindly asked the interview partners for suggestions regarding subjects which need to be improved and possible corrective measures.

Question 7.1:
On which crops should the Project focus?

Possible answers	**Frequency of responses**
dried apricot	2
sultana	**4**
hazelnut	-
fig	2
apple	1
herbs	1
spices	1
olive	1
fresh fruit & vegetables	1
Comments from companies	
CBs commonly noted leguminous seeds	

Question 7.2:
On which segment of the production chain should the Project focus?

Possible answers	**Frequency of responses**
production	**3**
agricultural inputs (i.e. fertilizers, plant protection products etc.)	1
transport	2
storage	**3**
processing	-
packing	1
Comments from companies	
CBs commonly noted "production".	

Question 7.3: **On which regions should the Project focus?**	
Possible answers	**Frequency of responses**
Aegean Region	**4**
Malatya	1
Eastern Black Sea Region	1
Central Anatolia Region	2
Eastern Anatolia Region	1
Manisa	2
İzmir	2
Aydın	1
Comments from companies	
Malatya, Manisa, Central, Eastern and Southeastern Anatolia, Aegean Region and Mediterranean Regions were noted by some of the CBs.	

Question 7.4: **What are the most urgent improvements?**	
Possible answers	**Frequency of responses**
more modern / better suited equipment, machinery, installations or facilities	1
better cleaning / maintenance	**2**
better hygiene conditions	**2**
better labelling of goods and lots	**2**

Question 7.5: **How can improvements be achieved best?**	
Possible answers	**Frequency of responses**
better training of farmers	**6**
better training of processors	4
better training of inspectors	2
more information to Turkish exporters	5
more information to European importers	3
better awareness / motivation of staff for quality issues	5
tougher sanctions for irregularities	-
more frequent analyses	2
other: consumer education	1
Comments from companies	
Many companies noted that tougher sanctions for irregularities would put an end to the Turkish organic sector.	
One company suggested that the Project should bring research, private sector, public sector and NGOs together. It should focus on connecting the government with the private sector and support companies in bureaucracy. Companies need better relationships with Provincial Directorates of Agriculture.	
Comments from CBs	
CBs agreed with all educative and informative measures above.	
They disagree with tougher sanctions.	
One CB pointed out that consciousness should be improved.	
One CB pointed out that there should be tougher sanctions to project owners. The penalty for CBs is 4 times more than the penalty for the project owner.	

8 Major findings of the survey

8.1 Frequency of residue testing

A great majority of the Central European actors stated that they analyse Turkish organic products with the same frequency as organic products from other origins. Only a small minority stated that they analyse Turkish organic products more frequently. A number of importers test all incoming lots from all origins. No trend between years was reported.

As Turkish exporters trade only goods of Turkish origin, they cannot compare with other origins. However, they can compare organic and conventional goods. There is a slight trend that organic products are analysed more frequently than conventional products.

Most actors stated that in the last two years, they have *increased the number of analyses* on organic products. One-half reported a slight increase (10 – 50 %), the other half a substantial increase (>50 %).

8.2 Residue cases

About one-half of the Central European actors stated that the incidences of residue cases has *substantially decreased since 2011*, while the other half stated that it has remained more or less *constant*. Residues most frequently occurred in lentils/chickpeas (for background explanations, see chapter 4.2), but also on a number of other foods. Glyphosate was mentioned twice, but a number of other substances were also detected.

Most of the Turkish actors stated that the residue situation has *improved since 2011*. Two-thirds of the companies experienced at least one case per year. Given the improvement mentioned by the companies, this value was surprisingly constant over the years. By far, residues occurred most frequently in *sultanas*. Glyphosate, dithiocarbamates and fumigants were noted particularly.

The majority of European and Turkish actors stated that residue problems in Turkish products are comparable to other origins. However, there were also more critical statements: a number of European actors stated that the problems are more pronounced in Turkish than in other products, and a minority of Turkish actors stated that the situation is critical.

Notes:

- At least in part, the increases are caused by growing trade volumes.
- The increases on the Turkish side are also caused by the government notice on April 2010. This notice issued by the Turkish Municipality of Food, Agriculture and Livestock clarified that no traces of synthetic pesticides are acceptable on organic foods (‘zero tolerance’). Before this notice was issued, trace amounts up to a certain level were accepted by certifiers.
- The perception is greatly dominated by the big residue cases. The most important one is the findings of glyphosate on lentils and chickpeas which occurred mainly in 2011 and 2012. Others are the findings of DDAC on strawberries (2011) and dodine on apricots (around 2008).

- The availability of new/more sensitive analytical methods is an important factor determining the residue patterns (e.g. glyphosate, DDAC). These patterns do not necessarily reflect trends in residues.

8.3 Detection of residues

The majority of all residue cases were detected by the *importers*. This is valid for the cases reported by Central European actors, as well as for those reported by Turkish actors. In cases where residues were detected by a CB, this can be either a Turkish or a European CB.

8.4 Communication between stakeholders

Most Central European actors state that exporters carry out analyses. Most actors mention also Turkish CBs. None of the actors had experience with Turkish authorities, and only a minority had experience with European authorities. Experiences with Turkish CBs were mixed; the main complaint was that they were difficult to contact and/or reacted too slowly. Experiences with Turkish exporters were generally positive. Again, there were some complaints about slow reactions.

All Turkish companies state that their CB carries out analyses, but only one-half is informed about the results. In addition, the Turkish exporters state that European importers carry out analyses and/or inform them about their results. Finally, a majority state that the Turkish authorities carry out analyses.

Notes:

- Turkish exporters often complained about the variety of analyses performed, sometimes with contradicting results. For example, one company mentions that residues were detected after shipping, while there were no residues before shipping.
- Such differences are generally ascribed to different analytical procedures, and there is widespread mistrust of analytical results. The reliability of analytical results is questioned.
- Contamination / commingling during transport is not an issue for the actors interviewed.

In conclusion, there is some dissatisfaction both among European and Turkish actors. Communication issues should be addressed because there is considerable scope for improvements. This is a matter of communication among most of the actors involved: (1) within Turkey, (2) within Central Europe, and (3) between Turkey and Central Europe.

8.5 Consequences of residues

For Central European actors, residue cases can have two major consequences, which were reported with similar frequency:

- Despite the residues, the product can finally be *marketed as organic*. Usually, the residue finding causes a significant delay and additional efforts.
- The product is *not marketed as organic*. If the residues were detected in a preliminary sample, the product is usually not imported. If the residues are detected when the product is already in Europe, the products are either returned to the exporter or marketed as conventional foods.

Turkish actors reported the same consequences, but no clear picture is evident.

Whether the products can be marketed as organic or not, depends also on the strategy with respect to action levels. Two strategies were reported:

- The first (and most frequent) strategy is that they tolerate residues up to 0.01 mg/kg. This value is well-known in Germany and elsewhere as the 'BNN orientation value', but it is at the same time the 'action value' of the EOCC residue guideline. In cases of doubt, the companies will delegate the decision to the CBs. Therefore, none of the European actors mentioned any of the residue guidelines. The second strategy (which was mentioned only by one company) is a 'zero tolerance'.
- Turkish authorities have a 'zero tolerance' policy. This is in contradiction to the EOCC residue guideline. Several CBs complained that this is unfair in view of the Central European policy.

8.6 Suspected causes and origins of contamination

European and Turkish actors have similar suspicions about the origins of contamination. Two major types of contamination were identified:

- Contamination in the *field* was pointed out most frequently. Here, drift from neighbouring conventional fields is the most important mechanism.
- *Post-harvest* contaminations were also pointed out frequently. European actors and Turkish CBs mainly pointed storage / processing, while Turkish companies frequently mentioned transport. Here, unintentional commingling was identified as the most important mechanism.

Lack of *knowledge* was identified as the major cause for contamination by European and Turkish actors. In addition, European actors also emphasized lack of *motivation*.

8.7 Suggestions for improvements

European actors had no clear preference for any food crops, while Turkish actors most frequently suggested a focus on *sultanas*.

European actors had no clear preference for any production stage, while Turkish actors most frequently suggested a focus on *production* and on *storage*.

European actors had no clear preference for any region, while Turkish actors most frequently suggested a focus on the *Aegean region,* which is the major production area for sultanas and figs.

Better *separation of organic and conventional products* was frequently suggested by European actors.

Better *training of farmers* was frequently suggested by European and Turkish actors. Better *training of processors and inspectors* were also pointed out frequently.

Better *awareness / motivation for quality issues* was frequently suggested by European and Turkish actors.

More *information to Turkish exporters* was frequently pointed out by Turkish actors.

More frequent analyses by exporters were frequently pointed out by European actors, while only a minority of Turkish actors mentioned it.

Note: *Tougher sanctions* are not seen as a useful tool. European actors frequently said that they were uncertain about their effects while Turkish actors expressed that this would put an end to the sector.

8.8 Overall pattern

Since a number of years ago, European importers have established a strict regime of residue testing on organic products. This has led to rejections of organic products, including products of Turkish origin. During the period from 2011 to 2013, there was a trend of Turkish exporters and CBs increasing their efforts in the area of residue testing. This causes considerable costs and leads to more frequent rejections before export. On the other hand, fewer Turkish organic foods are rejected after import, and Central European importers are generally satisfied with the quality of Turkish organic foods.

The more efforts are made for minimization of pesticide residues in the country of origin, the smaller will be the losses in export. The present survey shows this for Turkey, but this is a general pattern which can be observed anywhere.

9 Conclusions for the Cooperation Project

9.1 Relationship with the Quality Symposium

In November 2013, the Project held a 'Quality Symposium' in Izmir. The aim of this symposium was to bring CBs and the private sector together with national accredited labs in Turkey. Direct contacts between these stakeholders will have manyfold positive effects. Communication is facilitated when all actors speak the same language. Labs advised companies and CBs about optimum sample taking, packaging and shipping for specific situations. Transport of samples is more easy and analytical results will be available faster, probably also at a better price. Finally, a number of Turkish actors expressed some kind of mistrust for analyses carried out in a country far away. For these companies, results from Turkish labs might be acceptable more easily.

In conclusion, this symposium addressed several areas where the survey has demonstrated a need for improvements.

9.2 Conclusions on the Project's performance and on possible improvements

This survey can be used as a management tool for the German-Turkish Bilateral Project. If interpreted with the necessary caution, it can give indications on the performance of the Project in the first phase. In addition, it can be used to identify areas where the Project could be improved during the second phase. After the 'Quality Symposium' and the 'Wrap-up Meeting' (both held in November 2013), the following conclusions can be drawn:

Contribution of the Project to the development of the residue situation in Turkish organic products

There is a clear trend that residue problems in Turkish organic products have declined since 2011 (see above). Although it is not possible to give a quantitative estimate, it is likely that the Project has contributed to this trend. The aspect of networking is very important (see below) and may have contributed to the relaxation of the residue situation in general. In particular, networking is likely to have reduced those problems related to insufficient communication.

Networking

The Project has brought together various stakeholders, and has enhanced the contact between them. The 'TAGEM Workshop' (November 2013) has brought together the private sector and government researchers. The 'Quality Symposium' (November 2013) has brought together the private sector, government, CBs and Turkish laboratories. A special consultation meeting on organic poppy seed held at BioFach 2013 (February 2013) has brought together all actors of the supply chain of poppy seed (German and Turkish competent authorities, German and Turkish CBs, importer, exporter, grower and intermediate trading company).

In its second phase, the Project will aim at further improvements of the communication process among all relevant actors in residues cases. Among other activities, it will continue the work started with the consultation meeting at BioFach 2013. The 'EOCC residue guideline' provides guidance on communication in residue cases. The Project will also initiate better collaboration between CBs and labs, with the aim of developing better methods for sampling and testing of leave samples.

Legal framework

The April 2010 government notice postulates a 'zero-tolerance policy' for residues in Turkish organic products. At the Quality Symposium, participants stated that the practical implementation of this notice causes a number of problems. In the second phase, the Project will therefore help to moderate the revision process for this notice, in close collaboration with all relevant stakeholders.

Focus on critical aspects

The survey has identified several areas which are critical for the prevention of pesticide residues. Already in the first phase, the Project has focused on most of these areas. In the second phase, more emphasis should be put on drift prevention and on post-harvest contamination (see separate paragraphs below).

Reaching of target groups

Already in the first phase, the Project has reached most of the target groups in the organic supply chain very well. In conjunction with the increased focus on post-harvest contamination mentioned above, the Project should aim to address specifically the quality staff working in processing companies.

Focus on regions and crops

During the survey, several actors stated that the Project should be expanded to other regions. Such an expansion is already foreseen for the second Project phase.

Several actors also stated that the Project should be expanded with respect to the focus crops. Problems were especially reported for legumes (lentils & chickpeas) and cherries (sweet & sour). In view of the planned geographical expansion, the Project does not want to define fixed additional focus crops at the moment. However, it will be open to requests from stakeholders.

Focus on post-harvest contamination

The survey has shown that the Project should put more emphasis on post-harvest contamination. Topics may include (i) commingling; (ii) post-harvest contamination through equipment / machinery; (iii) contamination with fumigants; (iv) contamination by packaging materials.

In its second phase, the Project will determine which activities / trainings would be appropriate for reducing these different kinds of post-harvest contamination, and carry out such activities.

Focus on drift prevention

The survey has shown that the Project should also put more emphasis on drift prevention. For the second Project phase, a CB training course on risk based controls ('GfRS-Kurs') is already planned. Drift prevention will be one module in this course.

Possible focus on mycotoxin contamination

The survey has also shown that a focus on the prevention of mycotoxin contamination is desirable from the European viewpoint. Although mycotoxins are not pesticide residues, they are a major concern of the quality staff of European importers. Care must be taken that such activities do not lead to residues of disinfectants, which would be against the main goals of the Project.

In the second Project phase, the Project team will evaluate whether and how the mycotoxin problem can be addressed in the framework of this Project, and possibly carry out such activities.

Activities to improve awareness/motivation for quality issues along the supply chain

The consultation meeting held at BioFach 2013 proved to be very fruitful for improving the awareness for quality issues, and this consultation process will therefore be continued (see above).

Special trainings for quality staff are another important tool for reaching this goal (see above).

Usefulness of the 'train the trainer-concept' for achieving improvements in field production

Considering that small farmer projects organized by a company are the standard production situation in Turkey, the 'train the trainer-concept' is the right approach for achieving improvements at the stage of field production.

In this context, it is worthwhile noting that a recent audit carried out by the EU has apparently identified some weaknesses regarding this specific setup, including how controls are performed under such circumstances. As soon as the audit report is public, the Project team will carefully consider it, and possibly make adaptations in the workplan, to address specific issues identified in the audit.

10 Acknowledgements

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11 List of abbreviations

CB	Control Body
EOCC	European Organic Certifiers Council
ETO	Association on Organic Agriculture (Ekolojik Tarım Organizasyonu Derneği)
FiBL	Forschungsinstitut für biologischen Landbau (Research institute of Organic Agriculture)
MRL	Maximum Residue Level

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